SORALUCE

PRECISE MILLING AND TURNING OF LARGE AND COMPLEX COMPONENTS

MULTITASKING MILLING TURNING MACHINES › FMT


SORALUCE
FMT

VERSATILITY FOR THE HIGHEST PROFITABILITY

The new multitask centre SORALUCE FMT is presented as the ideal solution to achieve the highest profitability in the machining of large and technically complex parts. The latest version of this machine includes the new design concept that incorporates numerous ergonomic and safety improvements which, when added to the integration of the most advanced multifunction technology, complete a solution oriented towards maximum productivity.

The large work area provides the possibility of processing large components in a single machine. Thanks to the SORALUCE's exclusive head, the SORALUCE FMT translates that high versatility into reduced machining times, with the resulting advantage for the user.

This multifunction machine makes it possible to complete, in a single run, all the operations of turning, milling, boring, drilling and threading critical components for sectors such as aeronautics, energy or precision engineering.

The SORALUCE FMT centre makes it possible to have both unit and serial productions, and integrates a flexible work area that can be configured according to the customer's needs with one or several workstations, with fixed and rotating tables and even the possibility of integrating pallet changing systems.

BACKGROUND CONCEPTS

DESIGN

The design of the machine structure and dimensions have been optimised by an analysis based on “Finite Element Method” (FEM) simulation technique, optimising:

- Stiffness
- Antivibration
- Stress absorption
- Complete mechanical stability

HIGH DYNAMICS

The SORALUCE FMT multitask centre is a cutting-edge solution:

- Speeds:
  - Up to 45 m/min in longitudinal
  - Up to 35 m/min in vertical/cross
- Accelerations of 2 m/S² in each axis
- High capacity for chip removal
- Stable working conditions
- No maintenance

LONG LASTING PRECISION

Full cast iron, enabling:

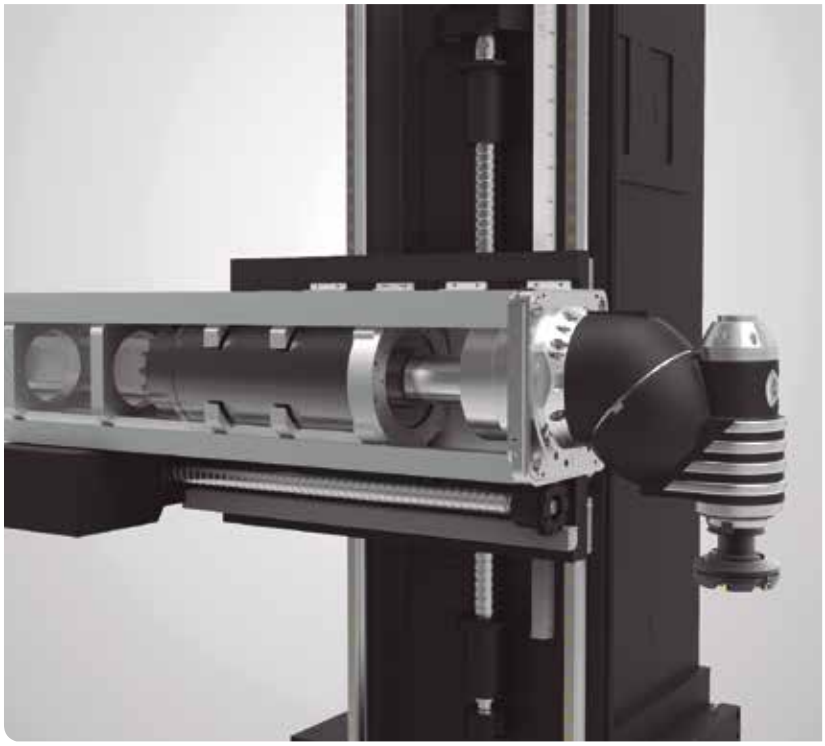
- Accuracy: long lasting precision
- Stiffness: proven physic stability
- Productivity: high cutting capacity

Thanks to the unique mechanical features of the cast iron and the optimised design, the precision and robustness of the machine are ensured for all the machine’s life.

HIGH PERFORMANCE

High torque direct drive spindle motor inside the ram, with a built-in cooling system, providing:

- Great precision
- High efficiency
- Low heat
- Reduced noise
- No maintenance
- No losses in the transmission
- Stable working conditions



COMBINED GUIDING AND DAMPING SYSTEM

SORALUCE is a pioneer in the use of linear guiding systems in high machining capacity equipment and heavy duty applications.

- The system combines our own specially developed hydrostatic damping elements with INA guiding systems on each axis
- The system guarantees immense stability eliminating any vibration during machining processes
- Using linear guiding systems since 1992
- More than 1500 references in the market working with this system
- It guarantees high precision and dynamics, low friction, low heat levels, minimum maintenance and reduced grease consumption

HIGH ACCURACY

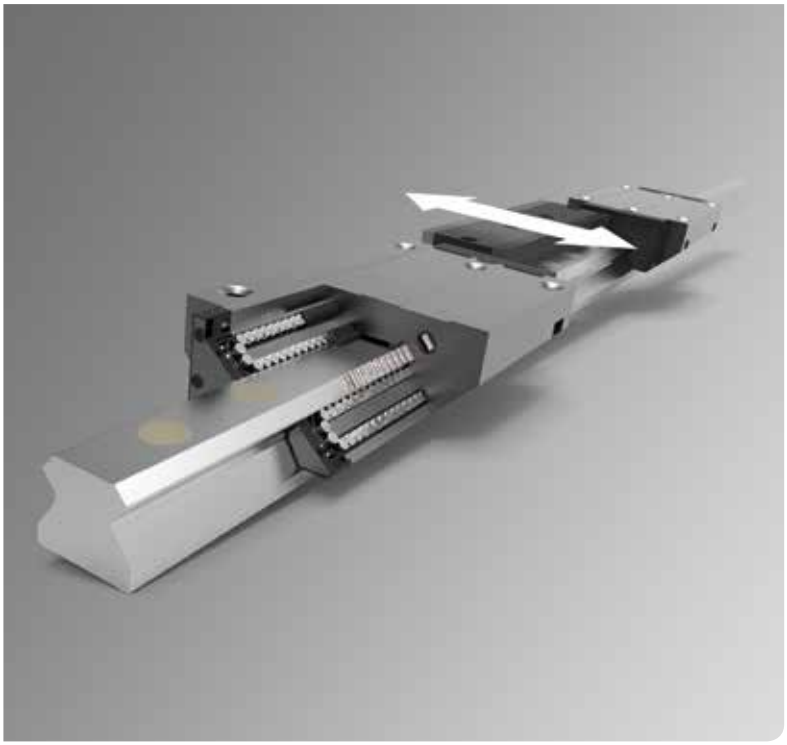
Optimised machine structure and guiding system that guarantee the precision along the machine's life.

INCREASED PRODUCTIVITY

High dynamics on the axes and machine's stability provide the right features to ensure stable machining on demanding applications while enables the high performance tools to give their best.

ENERGETIC EFFICIENCY

- Low maintenance costs
- Low heat levels
- Reduced grease consumption



THE NEXT LEVEL OF INNOVATION

DAS SYSTEM (DYNAMICS ACTIVE STABILISER)

PATENT PENDING

Beyond machine tool limits

The DAS system is a device capable of actively increasing the dynamic rigidity of the machine, which reduces the risk of chatter and increases the cutting capacity by up to 300% improving dramatically the production time during the roughing process.

The DAS system measures the vibrations during the machining process and generates, in real and time, by means of ram built-in actuators, an oscillation force that opposes the vibration.

- Allows the use of maximum power throughout the whole working area
- Up to 300% improvement of productivity
- Better surface quality of the machined part
- Extends lifetime of the tools
- Avoids premature aging of machine components

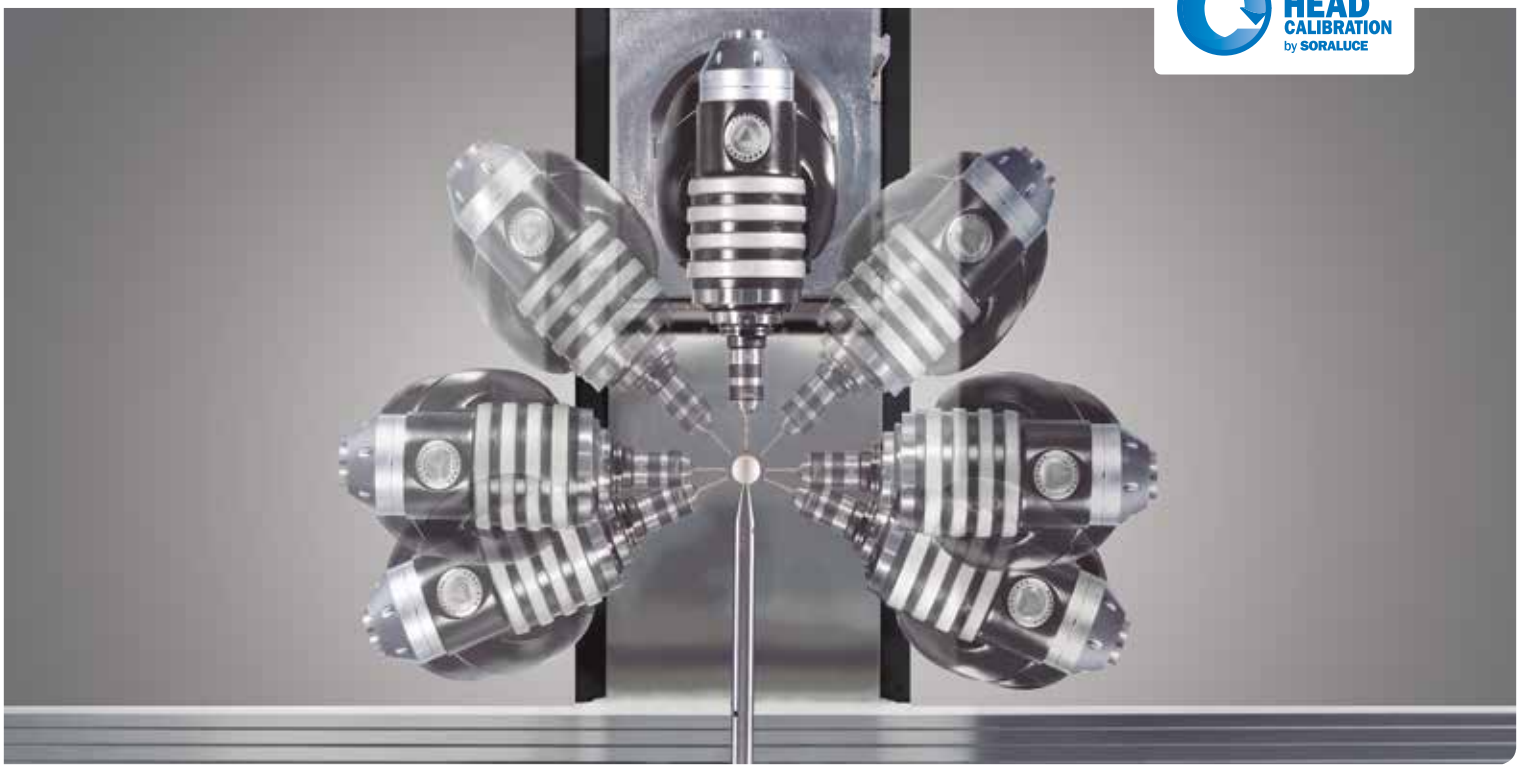
DAS by SORALUCE

DYNAMIC HEAD CALIBRATION

Even more accuracy in the working area

Thanks to specific SORALUCE developments, head articulation positioning deviations have been reduced to a minimum. This system allows the compensation of head's kinematic values on the whole working area.

- Automatic calibration for any type of head
- Transparent for the user: Automatic calibration of the head without the need to use specific programming functions
- Calibration of the head for any working area
- Offset error compensation due to thermal expansion
- Easy-to-use interface, 100% integrated with HEIDENHAIN and SIEMENS



TOTAL MACHINE

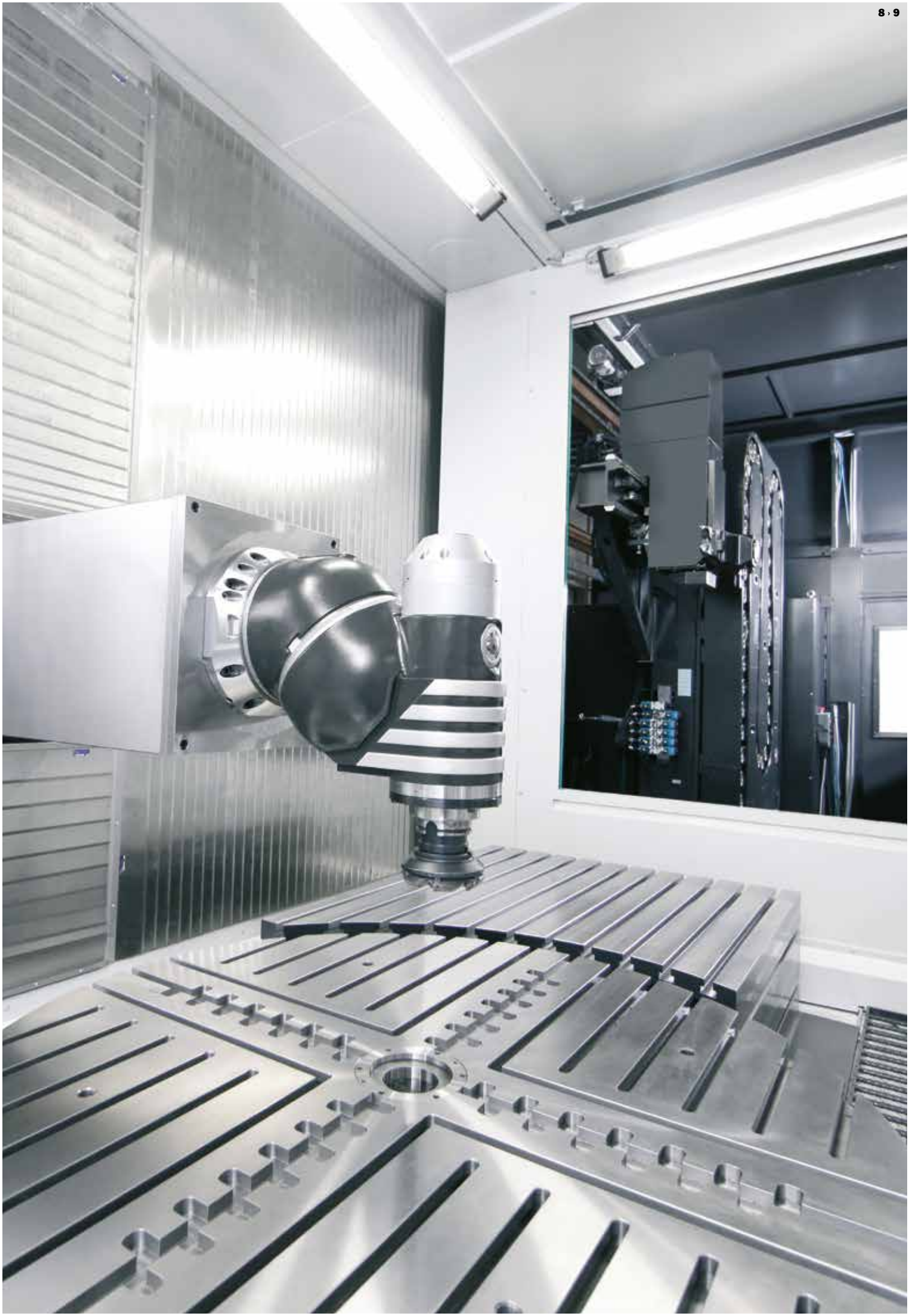
THE COMPLETE WORKING AREA ANALYSED FOR AN OPTIMAL RESULT

The new SORALUCE FMT Generation is based on a complete revision of the machine from the user's point of view focusing on improving operation efficiency and developing a Total Machine Concept.

The Total Machine Concept takes into account the machine but also the complete working area. All the interactions of the operator with the different machine elements are analysed for an optimal implementation.

Not only the machine, but the work area and its surroundings are analysed as a whole in order to guarantee an optimal final result. All of the interactions are studied to optimise from the clamping and loading of the workpiece to its removal once machined and its subsequent cleaning. The environment and its processes must be linked to the machine's own work, making all parts of the entire process as simple, safe and ergonomic as possible.

With this new design concept, SORALUCE has added to its equipment large number of innovations not only with the aim of facilitating work and making them a safer environment, but also to simplify maintenance and to minimise stoppage times, thus increasing the productivity and profitability of the machine.



MILLING AND TURNING HEADS

IN-HOUSE MANUFACTURED
HIGH RELIABILITY
BROAD RANGE

In order to cater to the diverse needs of each customer, SORALUCE's contrasted head technology is fundamental and provides the necessary customisation for an optimal configuration, with the possibility of including a large variety of standard heads and special solutions.

UNIVERSAL HEAD

37 kW
2,5° x 2,5° / 0,001° x 0,001°
4000/5000/6000/7000 min^{-1}

ORTHOGONAL HEAD

37 kW
1° X 1°
4000 / 5000 min^{-1}

MULTITASKING

The SORALUCE FMT model is a multitasking centre of great size with full functionality on milling and turning operations, thus allowing machining of very complex parts in a single set up.

The machine can integrate rotary tables up to 1600 mm diameter usable for both milling and turning operations.

Capto turning attachment

Own designed Capto C8 turning attachment can be connected to milling head by means of an adaptor flange (Hirth coupling).

- Highly versatible as it enables other head attachments as spindle extensions or angular heads
- Manual and automatic tool change versions for the turning tools available

MILLING TURNING HEAD

37 kW
2,5° x 2,5°
4000 / 5000 min^{-1}

- It positions and clamps the spindle at any angle for turning operations
- It enables turning operations in a diagonal direction (interpolation X/Z axes)

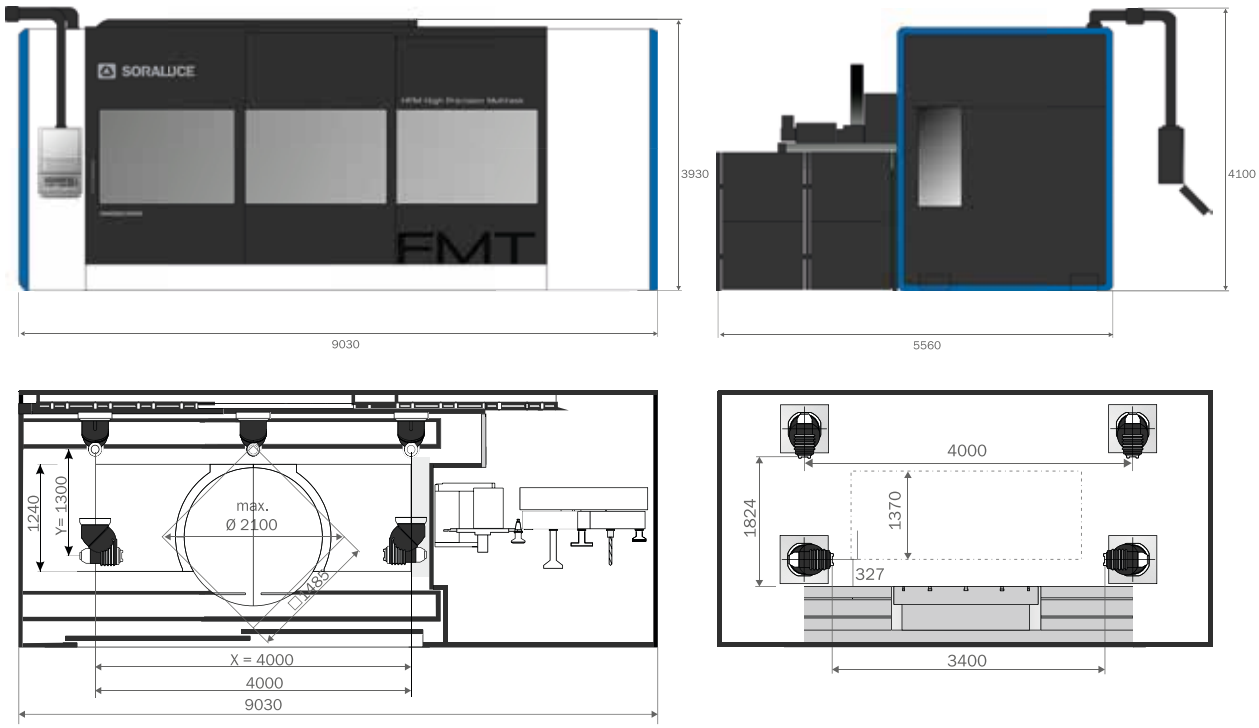
MULTITASKING MILLING TURNING MACHINE › FMT


SORALUCE

TECHNICAL SPECIFICATIONS AND LAYOUT **FMT**

CHARACTERISTICS		FMT 4000
Longitudinal traverse, “X” axis	mm	4000
Vertical traverse, “Z” axis	mm	1800
Cross traverse, “Y” axis	mm	1300
Fixed table	mm	1240 x 4000 with embedded turning table
Turning table diameter	mm	1600
Turning table drive motor**	kW	53
Turning table speed range**	min^{-1}	250
Maximum table capacity**	Kg	8000
Heads		Universal / Orthogonal
Spindle power	kW	43
Spindle nose taper		ISO-50 / HSK-100
Spindle speed range	min^{-1}	4000 / 5000 / 6000 / 7000
Rapid traverse	mm/min	45000 (X axis) / 35000 (Y, Z axes)
CNC system*		Heidenhain TNC 640 / Siemens 840 D SL
Coolant system		External coolant system over a ring / Internal coolant system up to 70 bar
Tool magazine	No.tools	40 / 60 / 80 / 100 / 120 / 250 / 300
Machine weight	Kg	32100

* Other CNC systems under request | ** Other specifications under request



Dimensions in mm.

VERSATILITY HIGHLY CONFIGURABLE

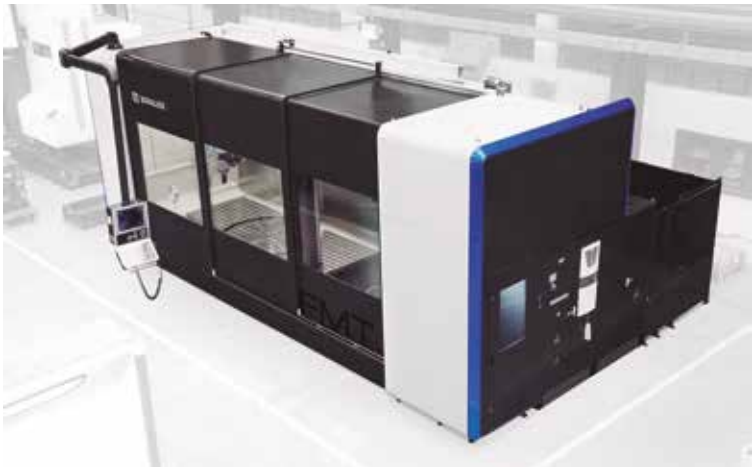
WIDE SIZED WORKING AREA

- Flexible working area configurable upon customers' needs
- It can be equipped with one or multiple working stations with fixed tables and rotary tables usable for both milling and turning operations
- Machine table is prepared for the integration of a turning table
- Both turning table and machine table surfaces are at the same height

GUARDING SYSTEMS

Totally enclosed, the work area of the SORALUCE FMT centre has been configured in order to guarantee the highest accessibility possible for the operator.

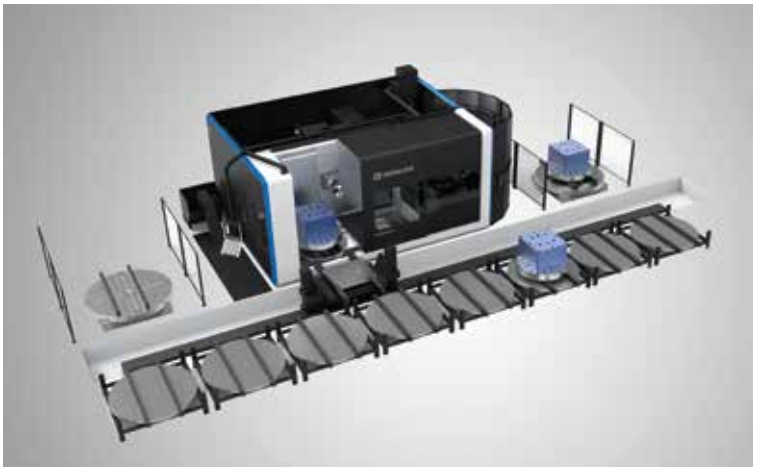
- Extensive glass surfaces
- Profusely illuminated inside to provide adequate visibility of the machining process
- Easy access to the work area by complete front and upper opening of doors
- Automatic operator doors
- Control panel on indexing and telescopic pendant arm, operating at the front and back area



AUTOMATION

SORALUCE provides different highly productive solutions.

Palletised systems and flexible manufacturing systems can be provided fully adapted to each customer's demands.



TOOL MAGAZINE

Installed on a separate closed area, the tool magazine is located out of the working area at one side of machine. The protection between the working area and the magazine is equipped with an automatic window which allows tool change.

Different alternatives are offered such as chain-type tool magazines for 40 / 60 / 80 / 100 / 120 tools or robot based tool changer with up to 250 tools.

CNC UNITS

Heidenhain TNC 640

The TNC 640 NC system by Heidenhain boasts the qualities demanded by highly technological machines now including multitasking capabilities.

- Wide variety of milling and turning cycles
- Time and cost saving
- HEIDENHAIN conversational or DIN/ISO programming with the simple Klartext dialogue

Siemens 840 D SL

The SINUMERIK 840D SL is a premium class CNC, with a superior system flexibility. It is the CNC of choice when opening up completely new technology fields.

- Modular and scalable
- Benchmark in open architecture
- Communicative at all levels

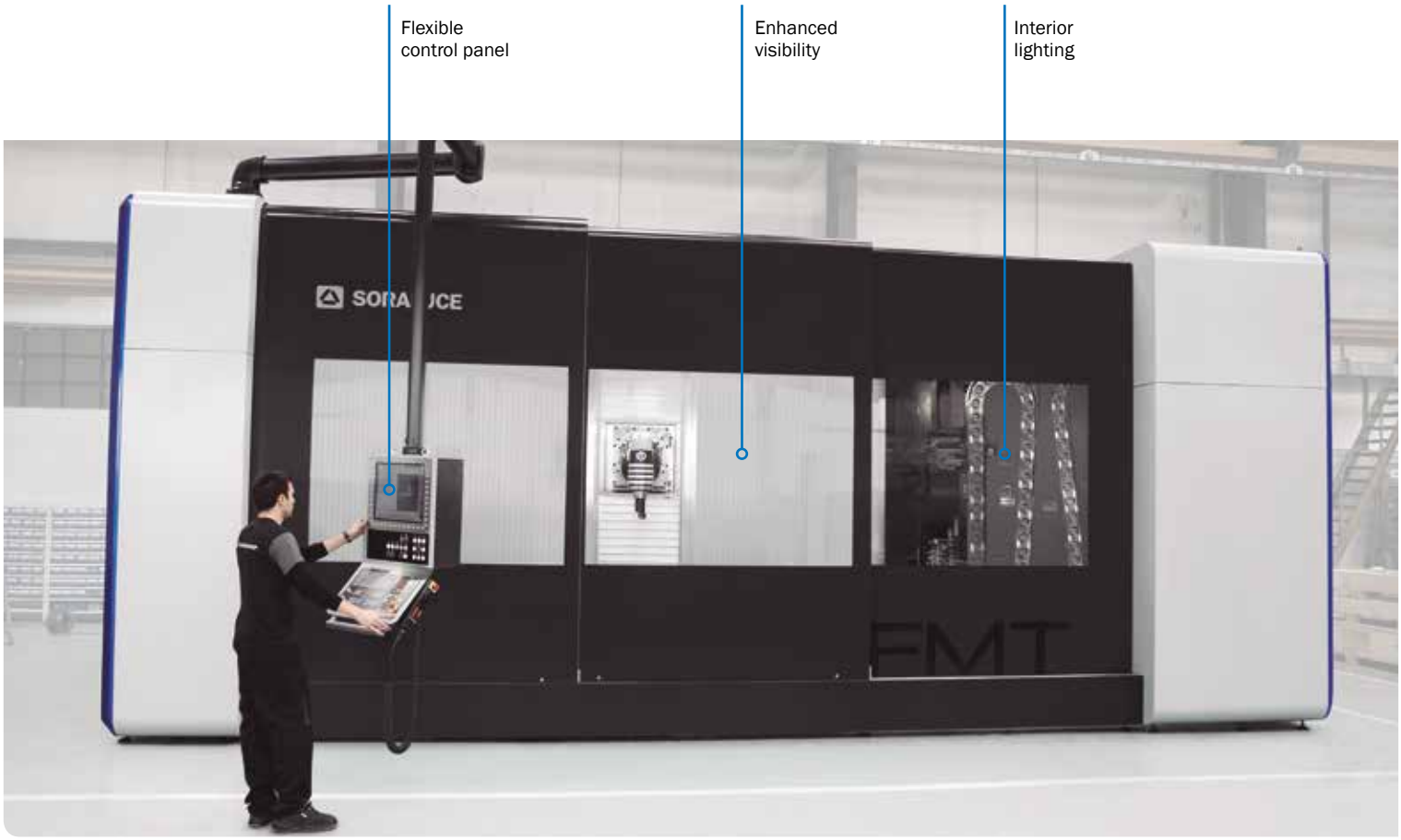
HUMAN MACHINE

COMFORT, SAFE AND ERGONOMIC

SORALUCE has created a new range of machines that will revolutionise the market thanks to the creation of a more human and ergonomic environment, while also significantly increasing the safety and ergonomics parameters.

WORKING AREA

- Better accessibility to the machine table area
- Working area perfectly lightened
- Signalling: better identification of elements
- More flexible control panel arm; operator can fix the most suitable position
- Enhanced visibility, ample glass surface
- Integration of the hydraulic group inside the enclosure, affording clean machine environment



TOOL MAGAZINE

› Full visibility of tool magazine

› Storage area's closure protecting sensitive items inside it from chips and coolant

› Access door to ease tool loading / unloading

MAINTENANCE

› The intervention areas are now more accessible

› Sliding shutters and doors to avoid the disassembly of panels

› Improved protection of the critical areas of the equipment

› Gauges and levels visible from the outside the machine without removing panels

› Ample areas to ease the maintenance tasks

› Specific signals to indicate maintenance and service points

LEADING THE MOST DEMANDING INDUSTRIES

The SORALUCE FMT multitasking machine allows to perform different cutting processes, including turning, milling, boring, drilling, tapping and drilling on one machine. All this is possible now for multiple kind of pieces of different sizes and shapes and with high efficiency and precision.

1

2

3

[1] Complete external and internal turning of a special fitting

[2] Big sized frame completely machined in the generous working area

[3] Intensive deep hole drilling operation on duplex material for small sized heat exchanger

[4] External turning operation in a special component

[5] Electric motor stator internal finishing in turning operation

[6] Housing machining combining milling and turning operations

[7] Special gear machining, fully adaptable to different teeth shapes

4

5

6

7

DANOBATGROUP

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